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ABSTRACT

In March 1994, the Alberta Education Minister, Halvar Johnson, established five implementation teams to assist in restructuring education in the province. One of those teams focused on business involvement and technology integration, with information collected by a Technology Integration Advisory Committee. This committee, whose members are listed, reviewed current literature, distributed questionnaires to educators and administrators, and heard presentations from education partners. This document synthesizes that research, which addressed the questions of how technology can be used to improve student performance, what evidence exists to prove that technology has a positive impact on learning and teaching, and how can technology best be used to improve access to programs and overall productivity in the education system. The report identifies eight goals, for improving: (1) student learning; (2) teacher preparation and support; (3) curriculum and assessment; (4) learning resources; (5) access; (6) technological capabilities of classrooms; (7) community and business partnerships; and (8) planning and coordination. For each goal there are lists of desired outcomes ("We want Alberta to be a province where...") and recommendations. Also included are a call for response, a glossary, a list of questionnaire respondents and presenters, and a survey to the readership. (BEW)

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talking with albertans

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TECHNOLOGY INTEGRATION IN EDUCATION

DISCUSSION PAPER

MLA Implementation Team

IR017655

July 12, 1995

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Please send your comments on this discussion paper and any other advice about technology integration in education to:

Mr. Denis Herard, Chairman
MLA Implementation Team on Business Involvement
and Technology Integration in Education
513 Legislature Building
10800 - 97 Avenue
Edmonton, Alberta T5K 2B6
Telephone: (403) 422-5378*
Fax: (403) 427-1835
Internet: TechInt@edc.gov.ab.ca

by October 15, 1995

If you have any questions about this report and the work of the MLA Implementation Team on Technology Integration, please contact:

Terry Kernaghan
Alberta Education
11160 Jasper Avenue
Edmonton, Alberta T5K 0L2
(403) 422-2814*
Fax: (403) 422-0576
Internet: TechInt@edc.gov.ab.ca

*to be connected toll-free from outside Edmonton dial 310-0000

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LEGISLATIVE ASSEMBLY
ALBERTA

Denis A. Herard
M.L.A. for Calgary Egmont Constituency

July 12, 1995

As Chair of the MLA Implementation Team on Business Involvement and Technology Integration, I am pleased to present this discussion paper on technology integration in education as we begin the next stage of consultation with Albertans.

Technology is changing our world, transforming our work, and becoming increasingly crucial to the success and prosperity of Alberta. To ensure that Alberta's students are well prepared for the 21st century it is essential that we find affordable ways to integrate technology into our education system.

Hung Pham, MLA for Calgary-Montrose, and I hope that this discussion paper will provide the foundation on which to develop recommendations for change and action in education for the benefit of all Albertans.

The perspectives contained in this discussion paper are the result of consultation with members of the education community and, in large part, the Technology Integration Advisory Committee. We have received presentations and information from the business sector, education associations, and representatives from post-secondary institutions.

We are interested in your views and suggestions. By responding to this discussion paper, you will be participating in a process that will inform and guide government policies and actions over the next several years.

Thank you for your continued interest in finding new and better ways to provide the best possible education for Alberta students.

Sincerely yours,

Denis Herard, Chair
Business Involvement and Technology
Integration Implementation Team

Legislature Office: 513 Legislature Building, Edmonton, Alberta T5K 2B6 Telephone: (403) 422-5378
Constituency Office: Bay 10, 8318 Fairmount Drive S.E., Calgary, Alberta T2H 0Y8 Telephone: (403) 640-1363

Technology Integration Advisory Committee

Mr. Denis Herard, M.L.A.
Calgary-Egmont, Chair

Mr. Brendan D. Dunphy, Representative
Alberta Teachers' Association

Mr. Chris Farthing, Director
Instructional Technology
Fort McMurray Catholic Schools

Mr. John Fisher, Director
Adult Development Programs
Advanced Education and Career Development

Ms. Catherine Gordey, Associate
Alberta Science & Research Authority

Mr. John Hogarth, CASS Representative
Sturgeon School Division No. 24

Mr. Glenn Johnson, Supervisor
Information Support Services
Edmonton Public Schools

Dr. Tom Keenan, Professor and Dean
Faculty of Continuing Education
University of Calgary

Ms. Cindy Lee Martin, Consultant
Research and System Development
Calgary Board of Education

Ms. Janet McCracken, Consultant
Alberta Research Council

Mr. Hung Pham, M.L.A.
Calgary-Montrose

Mr. John Percevault, Director
Technology and Communication
Grande Yellowhead Regional School Division No. 35

Dr. Milt Petruk, Professor and Director
CCDIC, Faculty of Education
University of Alberta

Ms. Patricia G. Redhead, Representative
Alberta Teachers' Association

Dr. Ralph Schienbein, Director
Planning and Data Services
Elk Island Public School Regional Division No. 14

Mr. Doug Sigler, Director
Strategic Resources Division
Public Works, Supply and Services

Ms. Sherrell Steele, Director
Development and Production
ACCESS Network

Mr. Paul Stevenson, Deputy Superintendent
Horizon School Division No. 67

Ms. Judy Tilston, Trustee
Alberta School Board Association

Mr. Fred Trotter, President
Council of Presidents, Fairview College
Public Colleges and Technical Institutes of Alberta

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Background

In March 1994, Education Minister Halvar Jonson established five MLA Implementation Teams to assist in restructuring education in Alberta. One of those teams was the MLA Implementation Team on Business Involvement and Technology Integration chaired by Denis Herard, MLA for Calgary-Egmont. The team also includes Hung Pham, MLA for Calgary-Montrose.

To assist the MLA Implementation Team, Mr. Jonson formed the Technology Integration Advisory Committee. The Committee is comprised of individuals from a diverse range of backgrounds, each with technology expertise.

The Committee completed a thorough review of current literature and initiatives in other jurisdictions across Canada and across the United States. Responses to questionnaires sent out in June 1994 were received from school superintendents, university and college presidents and business representatives. Presentations were also heard from a number of education partners.

Information gained from the questionnaires, presentations and deliberations of the Technology Integration Advisory Committee helped the MLA team gain insight into the current situation of technology and telecommunications in education across Alberta. It also gave the MLA team a better understanding of how technology could be used to improve teaching and learning in our schools, and the issues and challenges that need to be addressed.

Technology Integration In Education

How can technology and telecommunications be best used in Alberta's education system to improve student learning and performance?

What evidence is there to suggest that technology has a positive impact on learning and teaching?

How can technology and telecommunications be best used to improve access to programs and overall system productivity in Alberta's education system?

"The future of Alberta lies in the hands of all of us –and the task of building that future must begin today."

Ralph Klein, Premier

These are only a few of the important questions that the Technology Integration Team has considered. As Alberta students enter the Information Age, they will need to update their skills and knowledge continually. They will be using technology and telecommunications in every aspect of their lives. They need to be confident and optimistic about their ability to use these new tools.

While Alberta's education system has undergone many structural changes, the teaching and learning processes have changed little. Technology provides the opportunity to make instruction much more effective and improve student learning substantially.

Experience across Canada shows that technology is an effective tool to improve student learning. Multimedia learning resources help students to grasp difficult concepts and retain that learning longer. Technology can bring learning opportunities to students in small rural schools that previously were available only in urban centres.

Technology provides teachers with powerful tools. It makes it practical to personalize instruction to meet the wide range of student learning needs evident in every classroom. It becomes possible to use more varied approaches to learning and to keep track of each student's progress. Teachers are more effective because they can focus more of their time on instruction and devote less energy to administrative tasks.

"Alberta's education system must move in new directions to continue to provide a relevant, quality education for all Alberta students."

Halvar Jonson
Minister of Education

Students and teachers are no longer limited to the contents of a single textbook or to what is available in local libraries. The total storehouse of human knowledge is becoming accessible electronically and Internet makes it available anywhere, anytime.

These are not vague promises of future technologies. We can do it now. Some students and some teachers are already making use of technology in Alberta schools. But we have a long way to go to ensure equitable affordable access to technology and telecommunications throughout the province. All our schools must be equipped and all our teachers given the skills to use the new tools. We are convinced that strategic planning at both the provincial and school board levels is essential to ensure our children's future and make our educational system ready for the next century.

What We Want To Accomplish

"To really take advantage of the Information Age tools in education, the challenge is not to use them to do the old job better but to do something new."

David Thornburg, Technology Futurist

The directions and recommendations discussed in this paper would result in fundamental changes to our educational system—especially at the secondary level. We believe that simply putting more computers in classrooms is not the solution. We need to think about technology integration in a broader context: how technology impacts student learning, curriculum, teacher education, learning resources, partnerships, access and planning. Each piece plays a critical role in ensuring that technology is systematically and effectively implemented and in producing undeniable benefits to teaching and learning.

We need to establish a strong consensus on the direction to take and on how to make it happen. It will mean setting priorities and making decisions about the various roles of government, educators, school boards, parents and the business community. We believe that we have to start now and we have to get it right if Alberta is to maintain its educational and economic advantage.

We have listened to many experts and have been helped by the Technology Advisory Committee to draft the recommendations in this report. We want to hear which recommendations you support and what other things we should consider as we formulate a plan of action.

"New decision-making processes are needed to encourage consensus and public support for the fundamental changes required in the future."

Seizing Opportunities

Note: Technology integration referred to in this paper focuses on the use of computer and telecommunications technologies, rather than the general meanings of "applied science" or "system to achieve desired result."

A FRAMEWORK FOR TECHNOLOGY INTEGRATION

A FUTURE PERSPECTIVE

- This framework represents a possible future perspective of technology integration as it might influence education. It represents areas that are at the foundation of our education system and should be considered in the broader context of change.
- Are these perspectives appropriate in considering a new vision for technology integration in the province?
- Are there areas that we have overlooked or under-emphasized?
- Should we be concentrating more on some aspects and less on others?

TEACHER PREPARATION AND SUPPORT

- teacher preservice is adjusted to include competencies using technology in instruction
- on-line tutoring and computer-mediated learning resources are used regularly by teachers to update and improve their teaching skills
- teacher certification and employment includes demonstrated technology competencies and skills
- the teacher role shifts to instruction planner and coach-facilitator

CURRICULUM AND ASSESSMENT

- learner outcomes require experiences that are technology based
- assessment and reporting of student performance at provincial and jurisdictional levels includes information on technology competencies
- multimedia is used to improve learning and understanding of difficult concepts and relationships
- profiles of student work presented to parents contain demonstrations of skills and learning related to technology competency and use in processing, managing, and analyzing information
- gains in student performance are expected as a result of technology integration

PLANNING AND COORDINATION

- mechanisms are in place to assist in overall provincial planning for technology improvement and integration
- duplication of programs and services is reduced
- common standards and protocols are set
- learners can aggregate learning taken from accredited sources worldwide, and present profiles of their competencies to Alberta institutions for admission, advance standing and certification
- accreditation centres are registered with provincial authorities, or employers to certify learner qualifications
- technological capabilities of schools are improved as a result of provincial and school board coordination and planning

IMPROVING STUDENT LEARNING

- learners are at the centre of education planning and delivery
- learners take ownership of their own learning
- technology learning systems are used to personalize learning and to address specific learning needs
- learners at all levels interact with teachers and experts via technology
- some learners take advanced level courses while completing graduation requirements
- learners complete courses at their own pace using multimedia learning systems and courseware
- using technology, learners collaborate with other learners on projects
- parts of the school program are taken as independent study, or through distance/open learning
- all Albertans are independent lifelong learners

LEARNING RESOURCES

- learners have ready access to up-to-date computers and productivity software tools
- learners access multimedia databases (content) from distant servers via a provincial learning network
- schools regularly use interactive video and computer conferencing to provide specialized instruction and programs
- multimedia courseware is available for extensive use by teachers to improve instruction and learning
- assessment (diagnostic and other) databases are used
- a wider variety of program options is available to learners
- virtual reality simulations are used extensively to engage and motivate learners

PARTNERSHIPS

- schools, business, and the community are partners in technology integration
- schools and students assist the community and business through technology programs and services
- costs associated with technology integration in schools are reduced through partnerships with the community and business
- business resources provide turn-key solutions to assist in technology implementation
- community and business partnerships extend access to computers and programs during and after school hours

INFRASTRUCTURES

- learners have ready access to a provincial learning network, and Internet or SchoolNet services
- learners and teachers are able to interconnect provincially via E-mail and bulletin board services in all Alberta schools
- high demand courses at the high school and introductory college/university levels are available through satellite broadcast, cable, or Internet
- video-on-demand is available to learners and schools via cable or the network
- flexible scheduling improves access
- students collaborate with others on a provincial, national and global basis

PLACES OF LEARNING

- learners have choices of taking their education in schools, at home or in privately operated learning centres
- more learning takes place off-campus, at home, or other places convenient to the learner
- virtual schools and virtual learning centres are available for learning
- community access centres, with full telecommunications capabilities, are available throughout the province
- school districts offer skills upgrading to the community and businesses
- learning opportunities are available anytime, anywhere

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Challenges

There are many challenges ahead in changing an education system that has evolved largely in the absence of technology. While there are many positive features of the current system, we believe that continuing down the same road will not be in the best interests of young Albertans as they face a very different world and future. The challenges we must address go beyond the education system. They include more coordinated effort involving government, school jurisdictions, business and other provinces.

These challenges include:

- ensuring that all Alberta students have equitable access to technology and technology experiences regardless of where they go to school, or what their particular learning circumstances may be
- ensuring that all teachers are computer literate and have the necessary training and support to maintain their knowledge and skills levels
- building a level of trust and support for technology as a positive influence in education
- demonstrating accountability at all levels that investments in technology have resulted in improved student learning
- determining priorities for investment at decision-making levels having the greatest impact on needs of students
- building a telecommunications infrastructure in the province that is affordable and capable of meeting educational requirements well into the future
- ensuring efficiency and maximization of provincial funds to support public education
- finding the necessary financial resources from within the current allocation of education funds, other government sources, and in partnership with others, recognizing that new investments may be needed that will require reassessing priorities
- creating efficient development of technology-based resources through provincial and interprovincial collaboration
- building partnerships and alliances with business, communities, and other provinces to help reduce costs and to provide and maintain the technology infrastructure
- building smooth transitions between levels of education and grades through the use of technology
- upgrading and rewiring schools to meet new standards for telecommunications technologies
- coordinating and planning technology initiatives within education
- ensuring that provincial and jurisdictional allocations of funds to support technology integration are appropriate to address learning and teaching needs

"Technology is both a catalyst that propels change and a tool that makes change possible."

The Electronic School, Sept. '92

Planning For Technology Integration

While it is important to know where we are going, it is equally important to know how we are going to get there. The following sections represent key areas we believe need to be addressed in our report to the Minister of Education. Our recommendations must be clear in what they will accomplish and what actions should be taken. They must be reasonable in terms of cost to Alberta taxpayers, and realistic in what can be achieved over the next three to five years.

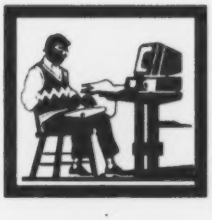
"Current global trends indicate the necessity of dynamic and results-based education, and developing skills and the ability to adjust to emerging technologies and on-the-job changes."

Seizing Opportunities

Our perspective of the current situation is outlined in these sections. We have also proposed a view of where we would like Alberta to be, and suggested recommendations for action to help us get there. As you read through the sections, consider the implications of these recommendations. Are they appropriate? Have we overlooked any important elements? The advice we receive from Albertans is important in shaping education and in formulating our final recommendations to government.

1. Improving Student Learning

Modern technologies are only beginning to be used in Alberta classrooms as a tool for student learning and teaching. The use of computer and telecommunications technologies is not systematic nor equitable throughout classrooms in our province. As a result there are significant differences in the time and quality of students' experiences using information technology skills. These inequities must be addressed for student learning to improve.



We want Alberta to be a province where

- Student productivity and the ability to learn is improved through the use of information retrieval and processing skills.
- Students effectively use technology to improve their ability to create and communicate information and ideas.
- Students have equal opportunities to develop knowledge and skills through the use and application of computer and telecommunications technologies.

We recommend that

- Schools use technology as a tool in all areas of instruction rather than teaching "computers" as a separate subject .
- Students routinely create, analyze and critically interpret information and data in all subject areas using the tools and skills of information retrieval and processing (e.g., word processing, graphics, spreadsheet, database applications) to make a measurable difference in student achievement.
- Schools provide students with equal opportunity to use and develop computer technology skills regardless of where they go to school.

2. Improving Teacher Preparation and Support

Our teacher training programs at universities and colleges must prepare teachers to enter classrooms confident and competent in the use of information technology skills. Teachers need to be computer literate. They need to know how to use the Internet and how to share those skills with students. Our education system must respond by providing professional development opportunities and continued support to help teachers integrate technology into their teaching.

We want Alberta to be a province where

- Teachers are well prepared, skilled and confident in using technology in their teaching, and where technology has changed how teachers teach.
- New methods and innovative approaches to delivery of instruction are part of teacher preparation and inservice programs.
- Teachers are trained and able to interact electronically with each other and with students.
- Teachers routinely integrate technology into their instruction and use technology to track and assess learning progress.
- Teachers develop, implement, and share innovative ways to integrate technology into their instructional programs and management functions.

We recommend that

- The faculties of education, school jurisdictions, the Alberta Teachers' Association and Alberta Education take shared responsibility for improving teacher knowledge and skills in the use of technology. In particular:
  - Work with teachers to develop a profile of technology-related knowledge and skills, and that these profiles be linked to expected student outcomes.
  - Adjust teacher preparation requirements to reflect the technology knowledge and skills needed by teachers now and in the future.
  - Involve teachers in developing and sharing innovative teaching methods and alternate delivery strategies.
  - Determine strategies for inservicing teachers, instructional support staff and school administrators in the integration and applications of technology.
  - Initiate or accelerate district initiatives to provide every classroom teacher with a computer, basic application software, and appropriate access to the Internet.
  - Provide teachers with adequate access and training (both preservice and inservice) to use the Internet and SchoolNet effectively.
  - Ensure that teachers are not taken away from primary teaching responsibilities in order to perform technology support roles.
  - Encourage greater use of private sector resources to provide turn-key solutions, training and technology support for teachers.

"The role of teachers must change to that of being a guide to resources instead of a conveyor of facts."

Byte, March, 1995

3. Improving Curriculum and Assessment

"In the future, we must rely on the skills and ingenuity of our workforce to add value to both traditional and new areas of economic activity."

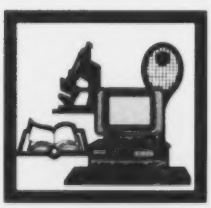
Seizing Opportunities

Global events and a changing marketplace are placing new demands on a workforce to be skilled in the use of information technologies and telecommunications. Students in Alberta need to be engaged in meaningful learning experiences that will help them to develop technology skills and be confident in their use of technology. Technology experiences must be embedded in our curriculum. Our assessment systems at local and provincial levels must also report student performance in using and applying technology.

We want Alberta to be a province where

- Provincial curriculum reflects a systematic integration of technology in how and what students learn.
- Curriculum reflects a blend of knowledge, critical thinking and workplace skills.
- Student abilities in the use of technology are part of the assessment and achievement reporting processes.
- Curriculum requires use of technology tools and multimedia learning systems.
- Objectives of the provincial curriculum are achieved where appropriate through a use of technology, or a technology based experience.
- Higher level thinking skills are achieved as a result of presentations of content through technology.

We recommend that



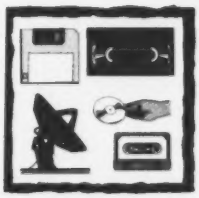
- Alberta Education incorporate technology learning experiences into all areas of the Alberta Program of Studies.
- Curricula set by the province emphasize cross-disciplinary applications of technology skills in student learning outcomes, with emphasis on problem solving and critical thinking.
- Alberta Education develop ways to assess and report student performance in the use of technology tools and information retrieval and processing.
- Schools use multimedia computer learning systems to achieve curriculum and instruction goals and objectives.
- Alberta Education assist teachers to effectively incorporate technology into curriculum and instruction.
- Schools make use of learning management systems that increase the ability of students to manage and assess their own learning and progress.
- Alberta Education adjust curriculum objectives in appropriate content areas to reflect higher levels of thinking that can be achieved through technological presentation of concepts.

4. Improving Learning Resources

There are widespread differences in the range and quality of learning resources available in Alberta schools. While the use of computers with productivity and instructional software is increasing, the availability of quality courseware and interactive multimedia resources is extremely limited. This situation has a direct impact on our ability to provide students and teachers learning resources to meet the wide range of learning needs and our ability to support curriculum implementation effectively.

We want Alberta to be a province where

- The very best resources for learning and teaching are available equitably and at reasonable cost.
- Teaching and learning are improved as a result of extensive use of multimedia and computer-assisted learning resources.
- Partnerships are used to help fund and develop state-of-the-art multimedia courseware.
- "Best value" expenditures for learning resources are made through volume purchasing and licensing arrangements by the province.
- Learning management tools help teachers, schools, school boards and the Minister to monitor and assess progress of student learning.



We recommend that

- Alberta Education take responsibility for insuring that implementation of future curriculum revisions are supported by computer and other technology-mediated learning resources.
- The Government of Alberta, in partnership with other provinces, education publishers, new media producers, and courseware developers, accelerate the development of interactive multimedia learning resources and learning management systems.
- Schools deliver high demand mainstream courses through computer assisted instruction and tele-instruction to improve access and reduce costs of conventional delivery.
- The Government of Alberta evaluate and license instructional software for province-wide use, and use volume purchases to reduce costs to schools.
- Government funded programs for development of learning resources be reviewed on a regular basis to ensure that educational value is provided.
- The Government of Alberta encourage and support initiatives aimed at exploring instructional applications of new and innovative technologies such as video-on-demand, and interactive video conferencing.
- The Government of Alberta assist in expanding the private sector courseware industry.
- Alberta Education acquire or develop learning resources that are more capable of presenting content and difficult concepts in highly graphic and interactive formats, and result in increased student understanding.

5. Improving Access

The education community in Alberta must be electronically networked to give our students the same advantages and learning opportunities that students have elsewhere. Our schools, post-secondary institutions, libraries, museums and other information and media resource centres must be electronically connected to each other, and to other places globally. Instruction, programs, and information must be available on demand from school, the home, the workplace, and other places of learning. Telecommunications services must be equitable and affordable throughout the province, and of sufficient capacity to deliver multimedia programs needed now and in the future. Government and the telecommunications industry must work together to make a provincial learning network a reality.

We want Alberta to be a province where

- Learners have greater choice in where they learn—schools, homes, public or private institutions, worksites, community access centres.
- Albertans of all ages have access to learning opportunities by being linked to a province-wide telecommunications information system and to the Internet.
- A wide range of educational programs and services are electronically available.
- Technology is used to reduce costs of conventional delivery of education.

We recommend that

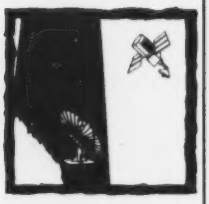
- Schools should make electronically-accessed courses available to students, and Alberta Education should make those courses available to other places of learning throughout Alberta.
- The Government of Alberta, in partnership with the information technology community:
  - Provide all schools with access to the Internet within one year.
  - Determine overall network requirements for electronic delivery of education and training programs and services in terms of program needs, bandwidth requirements, and associated costs for a multi-level network.
  - Determine the best means to deliver multi-sector (health, social services, education) telecommunications and network services to Albertans.
  - Connect all schools, post-secondary institutions and other places of learning including libraries and other information-media delivery centres (e.g., ACCESS-LTA and regional media centres) to the provincial learning network access points.
  - Determine province-wide standards and protocols for telecommunications and network services.
  - Encourage cable, satellite, telephone and television service providers to work together with government, in the delivery of education content.

"New technology is allowing students to reach beyond the school walls in a way they never could before."

Superintendent, Northern Lights School Division

6. Improving The Technological Capabilities of Classrooms

Major inequities exist in the quality of computers and software available to students in classrooms across the province. Results from a survey taken in 1993 indicate that a large percentage of computers used in schools are outdated and inadequate to meet current and future multimedia and network requirements. While the current ratio of computers to students (approximately 1:10) is increasing, this ratio is still inadequate to provide students the time and experience they need on computers. In many cases, the capabilities of computers available at students' homes are better than those in schools.



As the need to use computers and other technologies in our programs increases, our schools will need newer machines and software to support student learning and program goals. Our classrooms need to be appropriately wired to accommodate the use of technology. School authorities have indicated that provincial direction and support are needed to address improved access to technology, facility upgrading, and an aging base of computer hardware.

We want Alberta to be a province where

- Students and teachers have access to computers and other technologies needed to achieve learning and instructional goals.
- Albertans are confident that the education system is using modern technology efficiently to improve student learning.
- Use of emerging technologies in alternative delivery of instruction and programs is promoted and supported at local and provincial levels.
- There is equitable availability of computers and other technologies throughout the province.

We recommend that

- The status of technology currently used in schools be updated and regularly monitored to ensure that equity in access is maintained.
- Minimum standards be determined for educational technology needed in our schools to satisfy instructional, curricular, and administrative needs.
- Targets for increasing the current computer-to-student ratio be set by the province once instructional program requirements are determined.
- Funding allocated by the province in support of technology integration enable schools to attain the minimum requirements of technology needed to achieve instructional goals.
- Schools make greater use of emerging technologies (e.g., video conferencing) to enhance alternative instruction and delivery opportunities for students.
- Sources of funding including Instruction Block funding, Lottery funds, Heritage Savings Trust Fund, and business partnerships, be used to maximize provincial and school board efforts to support technology integration.
- Accountability measures be introduced to ensure that investments in technology are resulting in improved learning, and that these results be reported regularly.

7. Improving Community and Business Partnerships

By working together, current resources can be better utilized and the costs of public education can be reduced. Partnerships with technology vendors and businesses can result in "best value" purchases for Alberta schools. Government needs to form new and better alliances with community groups, with business, the telecommunications and technology industries, and other provinces, to achieve Alberta's economic, technological and telecommunications objectives and capabilities.

We want Alberta to be a province where

- Education, business, and communities partner to maximize efforts to improve technology integration and provide turn-key solutions in education.
- Schools are used by the community and by businesses to assist in their education and training needs.
- Economic and employment opportunities are created for development of knowledge-based industries.

We recommend that

The Government of Alberta expand and enhance business involvement and partnerships by

- Encouraging the education community to work closely with the business community in promoting the growth of a knowledge-based economy (e.g., development of multimedia learning resources).
- Articulating policy and guidelines for establishing value-added partnerships with the business sector.
- Encouraging partnerships to develop and market technology-based learning resources nationally and internationally.
- Working with business and the information technology industries to assist schools in improving their technology base and support/training needs, including turn-key technology solutions.
- Working with business to encourage technology related work experiences.
- Working with business to validate the relevance and quality of students skills in technology.

"Lifelong learning is key to continued employability and personal growth."

New Directions

8. Improving Planning and Coordination

Strong leadership and coordinated planning at the provincial and school board levels is needed to ensure that the efforts and investments made in technology integration are efficient, productive and ultimately result in an improved education system. There is a great deal of fragmentation and duplication of effort that exists in the delivery of education programs and services within and between levels of education. Cost savings for all Albertans will result through better leadership, coordination and planning. This is a critical and opportune time for government to champion the use of technology at basic (K-12) and post-secondary levels of public education and to implement mechanisms and processes that result in better strategic planning and coordination.

We want Alberta to be a province where

- Provincial efforts to improve technology and telecommunications in public education are well coordinated and included in an overall strategic plan for delivery of programs at both levels of education.
- Duplication of effort in the development and delivery of instructional programs is reduced within and between basic (K-12) and post-secondary levels of education.
- Appropriate mechanisms and processes are in place to help school boards implement effective and productive technology programs.

We recommend that

- Technology and telecommunications strategies be incorporated into the business plans of Alberta Education and school boards, and that these plans be linked to an overall provincial strategy.
- The Government of Alberta create an advisory body or mechanism to coordinate collaborative technology and telecommunications planning within the education sector. This mechanism would provide the Ministries and schools boards with advice on:
  - Delivery and transferability of programs and support (including distance learning) between secondary and post-secondary education
  - Program innovation, research and development
  - Province-wide telecommunications/information infrastructures
  - Information exchange and communication
  - Telecommunications standards and protocols
  - Courseware and hardware standards
  - Accountability measures

Goal 5: A Key Strategy for Improving Education

"Achieve increased efficiencies and effectiveness in the education system through restructuring the governance and delivery of education."

Meeting the Challenge II

Call For Response

"The need for Albertans to support change is urgent."

Report to Albertans, 1993

Now that you have read this document, we would like your feedback. Please return a completed questionnaire, submit a written brief, or both, by October 15, 1995. This discussion paper and your comments will form the basis of further public consultation to be held with education interest groups. Final recommendations will be forwarded to the Minister of Education at the end of October 1995.

Thank you for reviewing this document and participating in the consultation process.

"To be successful, we must build on our worldwide reputation for producing high quality, value-added products and services that others want to buy."

Seizing Opportunities

Please send your comments on this discussion paper and any other recommendations you would like the Implementation Team to consider to:

Mr. Denis Herard, Chairman
MLA Implementation Team on Business Involvement
and Technology Integration in Education
513 Legislature Building
10800 - 97 Avenue
Edmonton, Alberta T5K 2B6
Telephone: (403) 422-5378
Fax: (403) 427-1835
Internet: TechInt@edc.gov.ab.ca

Response requested by October 15, 1995.

Glossary

ACCESS-LTA - acronym for The Alberta Educational Communications Corporation, established in 1973 to develop, produce and distribute educational programs and materials. ACCESS NETWORK was an independent statutory corporation. Recently, the Government of Alberta approved a proposal by the Learning and Skills Television of Alberta (LTA), an Alberta company owned and controlled by the principals of Canadian Learning and Television (CLT), to privatize ACCESS.

Alberta Program of Studies - curriculum content for all grades throughout Alberta schools.

ATA - Alberta Teachers' Association.

bandwidth - a measure of the information-carrying capacity of a communications channel. Also, the amount of data that can be transmitted over the line in bits-per-second.

CAI - computer-assisted instruction. Any use of computers to aid or support instruction.

CD-ROM - Compact Disc Read Only Memory. Commonly referred to as CD (compact disc). These discs hold huge amounts of memory which can only be accessed, not changed.

community access centres - places in communities which are equipped for educational telecommunications (e.g., libraries, schools, community centres, shopping centres).

computer-mediated - the computer is used as a mediation tool. For example, students can use computers in their learning; teachers can use computers in instruction.

digital video-on-demand - the capacity to request and play any video segment from classroom learning stations or home TV.

digitized information - information which is stored in electronic format for computer processing.

inservice - programs and services provided for practising teachers.

Instruction Block Funding - the Instruction Block provides for the cost of principals, teachers, instructional support staff, learning resources and supplies, equipment, and furnishings used in the instructional program.

interactive television - delivery of programs via television which incorporates input and feedback from viewers.

Internet - a computer network which joins many government and university and some private computers together over phone lines.

multimedia - a combination of multiple forms of media in the communication of information. Multimedia enables people to communicate using integrated media: audio, video, text, graphics, fax and telephone.

multi-level network - networks which provide different bandwidth capabilities.

preservice - teacher preparation programs that are part of the education and training which teachers are required to complete before they are licensed to teach in Alberta schools.

SchoolNet - a cooperative initiative of Canada's provincial, territorial and federal governments, educators, universities and colleges and industry. It aims to link all of Canada's 16,000 plus schools to the electronic highway as quickly as possible.

telecommunications - the art and science of communicating over a distance by telephone, telegraph and radio. The transmission, reception and the switching of signals, such as electrical or optical, by wire, fibre, or electromagnetic means.

Three Year Business Plan - a plan which provides direction for education in the province of Alberta for the next three years.

turn-key solution - a solution which integrates multiple operations into a simple, easy-to-use function (like the ignition switch on your car which initiates the operation of many subsystems).

video conferencing - point to point or multipoint interactive voice and video transmission i.e., a video phone, commonly used in distance education.

Appendix

Acknowledgements of responses by institutions and organizations to a questionnaire distributed in June 1994:

Alberta College of Art
Big Country Educational Consortium
Calgary Board of Education
Calgary R.C. Separate School District No. 1
Camrose R.C. Separate School District No. 60
Cardston School Division No. 2
Chinook Educational Consortium
County of Lacombe No. 14
County of Leduc No. 25
County of Newell No. 4
County of Red Deer No. 23
County of Warner No. 5
County of Wheatland No. 16
Devon School District No. 4972
Drayton Valley R.C. Separate School District No. 111
Edmonton Public Schools
Edmonton R.C. Separate School District No. 7
Fairview College
Fairview School Division No. 50
Foothills School Division No. 38
Fort McMurray R.C. Separate School District No. 32
Fort McMurray School District No. 2833
Fort Vermilion School Division No. 52
Grande Prairie Regional College
Grovedale School District No. 4910
Hinton R.C. Separate School District No. 155
Jasper School District No. 3063
Keyano College
Lakeland College
Leduc R.C. Separate School District No. 132
Lethbridge Community College
Medicine Hat School District No. 76
Mountain View County Schools No. 17
Northern Alberta Institute of Technology
Northland School Division No. 61
North Peace R.C. Separate School District No. 43
Pembina Educational Consortium
Red Deer College
Red Deer Public School District No. 104
Rocky Mountain School Division No. 15
Southern Alberta Institute of Technology
Spirit River School Division No. 47
Stettler School District No. 1475
Strathcona County Schools
Sturgeon School Division No. 24
Taber School Division No. 6
The Banff Centre
Three Hills School Division No. 60
University of Alberta
Wainwright School Division No. 32
Westlock R.C. Separate School District No. 110
Willow Creek School Division No. 28
Yellowhead School Division No. 12

Note: Because of recent amalgamations, a number of the school jurisdictions listed above now operate under new names.

Acknowledgements of presentations made to the Technology Integration Advisory Committee in addition to those made by committee members:

ADETA
(Alberta Distance Education and Training Association)

Rob Bosscha	Lethbridge Community College Academic Studies

AETRF
(Alberta Educational Technology and Research Foundation)

Larry Clausen	Chair and CEO

AGT Vision of Telecommunications & Education

Hal Jackson	AGT
Roger Pederson	AGT
Vera Sanger	AGT

Alberta North Concept Model

Pat Larsen	Advanced Education
Dale Howard	Advanced Education
Mike Fleming	Lakeland College

Central Alberta Media Services

Dan Malone	Sherwood Park Catholic Separate School District No. 105
Louise Connolley	Sundance Separate Catholic School Board No. 10
Klaus Puhlmann	Grande Yellowhead School Division No. 35

Community Task Force on the Future of Technology – Elk Island Public Schools

George Glasier	Chairman

Distance Learning

Clayton Wright	Grant MacEwan Community College

Premier's Council on Science & Technology (now the Science & Research Authority)

Marshall Williams	Taskforce on Telecommunications

Acknowledgements of responses by the business community to a questionnaire distributed in June 1994:

Apple Computers Canada Incorporated
AGT Business Services
Corporate Computers Incorporated
Digital Equipment of Canada Limited
IBM Canada Limited
Northern Telecom Canada Limited
Northline Telecommunications Incorporated
Shaw Communications Incorporated
Stentor Resource Centre Incorporated
Videotron Communication Limited
Xerox Canada Limited

We Want to Know What You Think

Now that you have reviewed the discussion paper on Technology Integration In Education, we ask that you complete the following questions and return them to Mr. Denis Herard, MLA Calgary - Egmont at the address listed on page 13.

a. Do you presently have children in school?

- ❑ Yes
- ❑ No

b. Are you responding as a:

- ❑ parent
- ❑ teacher or school principal
- ❑ school district administrator
- ❑ business person or representative
- ❑ school trustee
- ❑ other _____

c. Are you representing the views of a group or organization?

- ❑ No, I am responding as an individual
- ❑ Yes, I am representing _____

Optional: This information will be used to create a mailing list so that we can provide you with future reports produced by Alberta Education relating to educational technology, and for no other purpose.

Name _____

Address _____

_____

Telephone _____ Fax _____

The Implementation team is interested in hearing from Albertans on these important questions:

1. How important do you believe it is for the future of Alberta students to be skilled in the use of technology, and to have knowledge and competencies in the use of information retrieval and processing?

- ❑ very important
- ❑ important
- ❑ somewhat important
- ❑ not at all important

2. Please rank the following areas in the priority you think they should be addressed. (Give 1 to the highest priority and 5 to the least important.)

- ❑ Teacher preparation and support
- ❑ Curriculum development
- ❑ Networking infrastructure
- ❑ Computer hardware and software
- ❑ Clear policy direction

3. In this discussion paper several actions are proposed to meet the challenges facing our education system. We want to know how strongly you support recommendations proposing that:

	Strongly Agree	Agree	Disagree	Strongly Disagree
a. Technology be incorporated into all subject areas of the Alberta Program of Studies.				
b. Program changes be supported by technology-based learning resources.				
c. Schools report on student skills using technology.				
d. Every classroom teacher has a computer, appropriate software, and access to the Internet.				
e. Teacher education programs include technology skills.				
f. Inservice programs are provided for teachers to upgrade their knowledge and skills.				
g. Alberta Education accelerate its development of technology-based learning resources.				
h. Plans for technology integration be included in the business plans of Alberta Education and all school jurisdictions.				
i. The Government of Alberta create a mechanism to coordinate technology planning within the education sector.				
j. Funding for technology should come from:				
– existing educational grants				
– Lottery funds				
– contributions by business				
– none of these				

4. How should technology change curriculum, the way programs are delivered, the way teachers teach, and the ways in which students learn throughout Alberta?

5. What gains in student achievement should we expect from integrating technology across all subject areas?

6. Are there outcomes or measurements you think should be used to indicate improved student learning as a result of technology integration?

7. What is the most important role government should play at this time to support technology integration in Alberta schools? Why?

8. What roles should others (e.g., school boards, school councils, administrators, teachers, Alberta Teachers' Association, faculties of education) have in furthering technology integration? Why?

9. How should current provincial funding for education be allocated or reallocated to support technology integration?

10. What barriers to technology integration or other factors have we not yet considered?

Any other comments?

ALBERTA
EDUCATION

Office of the Minister

July 12, 1995

To: School Board Chairs
Alberta School Boards' Association
Alberta Teachers' Association
Alberta Catholic School Trustees' Association
Public School Boards' Association of Alberta
College of Alberta School Superintendents
Alberta Home and School Councils' Association
Superintendents of Schools
School Principals
School Councils

As partners in education, your ideas regarding technology integration are essential to our ability to improve education in Alberta.

Technology integration is a key component of our Three-Year Business Plan for education. It is our belief that the enhanced use of technology will improve student learning.

Work has already begun in developing a plan for technology integration in education. In March of 1994, I established the MLA Implementation Team on Business Involvement and Technology Integration to consult on and assist in the implementation of a plan to improve the education system through the use of technology. Together with the Technology Integration Advisory Committee, the MLA Implementation Team identified recommended actions for integrating technology.

.../2

228 Legislature Building, Edmonton, Alberta, Canada T5K 2B6 Telephone 403/427-2025 Fax 403/427-5582

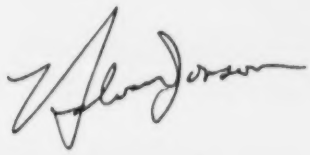
Printed on recycled paper

Enclosed you will find a questionnaire that invites your feedback on these proposed recommendations. I encourage you to complete and return the questionnaire so that we may ensure that the decisions we make regarding technology integration in education are the best decisions for our students. You may also wish to submit a brief for consideration by the Implementation Team.

After we have collected and considered your responses we will have the basis of our plan for technology integration in education.

Thank you for your participation and commitment to education in Alberta.

Sincerely,



Halvar C. Jonson
Minister of Education

Attachment

Please send your comments on this discussion paper and any other recommendations you would like the Implementation Team to consider to:

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Response requested by October 15, 1995.